Trauma Resource Tool:
Resource Assessment for Care of the Morbidly Obese Trauma Patient

The Trauma Medical Directors' Technical Advisory Committee is an open forum for the directors of designated trauma services in Washington State to share ideas and concerns regarding the provision of trauma care. The workgroup meets twice a year to encourage communication between services so that they may share information and improve the quality of care that they provide to patients. On occasion, at the request of the Governor's Steering Committee on EMS and Trauma Care, the group discusses the value of specific guidelines for trauma care procedures.

This resource assessment tool is distributed by the Washington State Department of Health on behalf of the Governor-Appointed Steering Committee on Emergency Medical Services and Trauma System to assist trauma care services with the development of their trauma patient care guidelines. Toward this goal the Department has categorized the type of document, the sponsoring organization, how it was developed, and whether it has been tested or validated. It is hoped that this information will assist the trauma service in evaluating the content of this tool and its potential benefit for practice or any particular patient.

The Department of Health does not mandate the use of this resource tool. The Department recognizes the varying resources of different services and that approaches that work for one trauma service may not be suitable for others. It is recommended that trauma services and physicians that choose to use this resource tool consult with the Department for any updates to its content. The Department appreciates receiving any information regarding practitioners' experiences with this tool. Please direct comments to Mary Rotert RN, (360) 236-2874 or mary.rotert@doh.wa.gov

This is a trauma resource assessment and planning tool. It was adapted from documents developed by Northwest Hospital (Seattle WA), Overlake Hospital Medical Center (Bellevue WA), Southwest Washington Medical Center (Vancouver WA), the professional literature, and internet resources. The Trauma Medical Directors workgroup reviewed the guideline, sought input from trauma care physicians and nurses throughout Washington State, and used that input to make the changes. The guideline was then endorsed by the Steering Committee, and by the DOH Office of EMSTS. This tool has not been tested or validated. Further information is available at the address listed.

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Trauma Resource Tool:
Resource Assessment for Care of the Morbidly Obese Trauma Patient

This resource tool is provided to assist trauma care providers in planning care for morbidly obese trauma patients. Facilities are encouraged to evaluate their community's population, potential need for care, and pre-hospital, hospital, and community resources that can be employed. Each hospital must know their equipment specifications for weight, girth, and width limits. In addition, facilities should be aware of the limits of pre-hospital transport equipment. Purchase, rental or adaptation of special equipment and supplies may be needed. Staff should be authorized to lease or procure necessary equipment as soon as possible. The availability of bariatric equipment may decrease the level of staffing needed.

Treatment and care of morbidly obese patients involves compassion, respect, and dignity. Without appropriate equipment, management of these patients can be frustrating, embarrassing, and a risk to safety for both health care providers and patients.[7]

Morbid obesity is defined in the literature as a body mass index (BMI) greater than 40, and in the US, is confined to about 10% of the population [1]. BMI equals weight in kilograms divided by height in meters squared. [8, 2] Patients with body weight greater than 350 pounds (158 kilograms) are likely to require specialized equipment, additional personnel, and treatment and diagnostic modifications. Standard hospital equipment may not be safe for use by morbidly obese patients.

A. Assess Prehospital, Hospital, and Community Resources Prior to Need

1. Maintain a close liaison with EMS to maximize prehospital notification of incoming patients.
2. Include dispatch centers to assist with deployment of appropriately equipped ambulances.
3. Determine the weight and girth limitations of all standard and bariatric equipment in all patient care areas. Include specialty and kinetic beds in this assessment. Consider if available standard patient devices, such as blood pressure cuffs and IV catheters, are useful for morbidly obese patients.
4. Determine which receiving trauma services have bariatric patient and equipment capabilities that exceed your facility's capabilities.
5. Measure the width of in-house and specialized vendor equipment and record which hospital doorways the equipment will not fit through. Identify the hospital storage location for bariatric equipment.
6. Identify bariatric bed and equipment vendors and turnaround time. Determine if equipment has adequate capabilities such as oxygen tank, monitor, IV bag, storage.
7. Locate scales to measure exceptional weights, along with the weight limitation of the scale. Determine location and capabilities of other scales in facilities such as a laundry scale that can be used. Identify a process for using these alternative scales.
8. Explore the ability of portable and stationary imaging equipment to produce quality images for obese patients, determine if any adjustments are needed. Consider plain radiography, CT scans, MR imaging, ultrasound. Determine radiolucency of patient transfer devices, and label with this information.
9. Plan for a source of additional personnel to assist with transfer, transport, and procedures throughout the patient's hospital stay. Positioning for procedures may require more staff to retract and lift the panniculus and skin folds. Explore in-house staff, EMS, and fire department staff availability.
10. Explore the capabilities of receiving facilities and home health agencies to care for morbidly obese patients.

11. Develop knowledgeable multi-disciplinary teams to be mobilized for planning and provision of care. Develop standardized protocols to assist caregivers to rapidly obtain appropriate equipment and plan care.
12. Encourage the development of expertise and capabilities for care of morbidly obese patients in departments such as nursing, medicine, mental health, radiology, surgery, nutrition, pharmacy, rehabilitation, physical therapy, occupational therapy, respiratory therapy, and materials services. Support continuing education and research in the care of morbidly obese patients.

B. Obtain Patient's Prehospital History from EMS

In addition to the usual trauma patient assessment, also determine:

1. Details of environment where patient was injured.
2. External cause of injury.
3. Factors contributing to injury.
4. Estimated weight, girth, width of patient.
5. Pre-hospital and community experiences in caring for and transporting patient.

C. Gather Equipment and Personnel to Receive Patient in ED:

1. Bariatric bed or gurney.
2. Transfer equipment such as cargo net or large person transport device, air transfer mattress, multiple slider boards, transfer pads, or multiple backboards.
3. Large adult or thigh BP cuff, cervical collar, foam blocks, sand bags, towel rolls, taping or strapping supplies.
4. 2 inch peripheral IV cannulas, or 6 inch spinal needles for venous access.
5. Central line insertion tray.
6. Extra-large gowns.
7. Because DPL catheters may not be long enough, anticipate use of exploratory laparotomy for abdominal trauma assessment.
8. Additional staff to assist with transfers, procedures.

D. Operating Room

1. Standard OR or procedure table may be inadequate. Arrange for bariatric table.
2. Use transfer equipment, cargo net, air transfer mattress, or slider boards to move patient.
3. Proper positioning of the patient and limbs may be difficult.
4. Prone positioning is particularly problematic and will require additional support and monitoring of the patient and the pressure on the abdomen.
5. The cushioning capability of a mattress may be compressed.
6. Bed width extenders, arm boards, and stirrups may be needed to provide alignment.
7. The length of spinal needles may be inadequate.
8. Restraints must be used with care to prevent excess skin pressure and nerve compression.
9. Electrosurgery equipment may require special adapters and dispersive pad surfaces.[1]
10. Careful scheduling of procedures, and simultaneous procedures may decrease the amount of time patient is under anesthesia.
11. Give early consideration to placement of prophylactic IVC filter.

E. In-Patient Unit

1. Bariatric hospital bed frames can support larger patients.
2. A hydraulic lift, overhead framing, and a bariatric trapeze bar may assist the patient moving in bed.
3. Physical therapy evaluation can assist in determining and improving patient's ability to move safely.

4. Consider dietitian/nutritional consult.
5. Consider sleep apnea evaluation.
6. Consider options for DVT prophylaxis. Pneumatic boots may not accommodate patient—or it may be possible to Velcro two boots together, or use leg boots on arms.

F. Discharge Planning

1. Early in the patient's stay, explore the ability of trauma rehabilitation units, skilled nursing or intermediate care facilities to accommodate very large patients.
2. Assist with establishment of a long-term relationship with a primary care provider.
3. Consider need for home health care assessment and follow-up physical or occupational therapy, nutritional care, other specialties as needed.
4. Assure receiving environment has appropriate equipment to maintain safety, and that patient can access living areas. Determine if equipment patient has in home is adequate for ADL's and health needs.
5. Arrangements and time for the construction of ramps and the location and installation of specialized home equipment may be necessary.
6. Determine a safe means of transport. Contact EMS agencies with details of patient size and weight and the equipment needed. Consider bariatric ambulance availability--confirm weight and size limit as well as air ambulance weight and girth limits. Evaluate the ability of family or friend and vehicle to provide safe transportation. Assist the patient in obtaining adequate motor vehicle restraints.

Equipment Weight and Size Limits

The maximum weight limit of hospital equipment varies considerably.
For the equipment in your facility, check with the equipment manufacturer for the most reliable weight and girth capability specifications. Use this table to record your equipment limitations. Also, to make this information quickly and easily available to all, label equipment with maximum weight, width, and girth limits.

Equipment Capabilities List

Equipment	**Typical Maximum Weight Limit (lb. / kg.)**	**Typical Equipment Width in inches**	**Your Facility's Equipment Maximum Weight Limit (lb. / kg.)**	**Your Facility's Equipment Width in inches**
Ambulance, bariatric	1000 / 453			
Ambulance, air	350 / 159			
Bed	400 – 500 / 182 - 227	35		
Bed, bariatric	850 - 1000 / 386 – 453	38 - 50		
Backboard	500 – 800 / 227 - 363			
Cargo net	249 – 10,000 / 113 - 4536			

Equipment	Typical Maximum Weight Limit (lb. / kg.)	Typical Equipment Width in inches	Your Facility's Equipment Maximum Weight Limit (lb. / kg.)	Your Facility's Equipment Width in inches
Chair, cardiac	250 - 850 / 114 - 386			
Chair, shower	250 / 114			
Commode, bedside	250 / 114			
Commode, bedside bariatric	850 - 1000 / 386 - 454			
Gurney, prehospital transport	350 – 500 / 159 - 227			
Gurney, bariatric	1000 / 454			
Kinetic bed, bariatric	1000 / 454			
Lift, patient	265 / 120			
Lift, bariatric patient	1000 / 453			
Mattress, air transfer	No limit			
Mattress, bed, low air loss	1000 / 454	39 – 54		
Scales, bed	400 – 600 / 184 - 272			
Scales, standing patient	400 / 184			
Scales, standing, extra capacity	450 – 1000 / 204 - 454			
Slider board				
Stretchers	300 – 660 / 136 - 299			
Table, Angiography	364 / 165			
Table, CT	350 / 159			
Table, CT, bariatric	450 / 204			
Table, MRI	350 / 159			
Table, Nuclear Med	330 / 150			
Table, OR	375 / 171			
Table, OR, extra capacity	800 - 1000 / 363 - 454			
Table, X-ray	350 / 159			
Toilet	300 / 136			
Trapeze, overbed, bariatric	1000 / 454			
Walker, bariatric	500 / 226			
Wheelchair	250 – 300 / 114 - 136			
Wheelchair, bariatric	700 – 1000 / 318 - 454			

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